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THE DENTAL
DIGEST



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About Our CONTRIBUTORS

L. F. ANDERSON, M.D. was graduated in 1907 from the University of Buffalo. Doctor Anderson is a Fellow of the American Society of Anesthetists and the International College of Anesthetists; a member of the American Medical Association; the International Anesthesia Research Society; Associated Anesthetists of the United States and Canada, and the Medical Society, County of Erie, New York. Doctor Anderson is the author of several articles published in the medical literature. His practice is limited to anesthesia, and he is the attending anesthetist at Millard Fillmore, Emergency and Lafayette General Hospitals, and consulting anesthetist at the Columbus and Gowanda State Hospitals.

FRANCIS ARTHUR BULL received his D.D.S. in 1923 from Marquette University School of Dentistry. Doctor Bull is a member of the American Dental Association, and Supervisor of Dental Education of the Wisconsin State Board of Health.

KARL JAMES HUMPHREYS, D.D.S. (University of Southern California College of Dentistry, 1916). Doctor Humphreys is a member of the American Dental Association, the First District and Southern California State Dental Associations, and the Pacific Coast Society of Prosthodontists. Doctor Humphreys practices general dentistry.

PUBLICATION OFFICES:

1005 Liberty Avenue, Pittsburgh, Pennsylvania. Merwin B. Massol, Publisher; W. Earle Craig, D.D.S., Associate; R.C. Ketterer, Publication Manager. Manuscripts and correspondence regarding editorial matters should be addressed to the Editor at 708 Church Street, Evanston, Illinois. Subscriptions should be sent to the Publication Offices, 1005 Liberty Avenue, Pittsburgh, Pennsylvania. Subscription, including postage: \$2 per year in the United States, Alaska, Cuba, Guam, Hawaiian Islands, Mexico, Philippines, Puerto Rico. To Great Britain and Continent, \$2.75; Canada, \$2.00; Australia, \$2.75. All other countries, \$2.75. Single copies, 25c.

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Edward J. Ryan, B.S., D.D.S., *Editor*

Ethel H. Davis, A.B., *Assistant Editor*

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The Education of the Dental Patient*

X. THE COLLAPSED FACE



THE NORMAL FACE

Cheek

Teeth in Position

Tongue

THE COLLAPSED FACE

Cheek Sunken

Teeth Lost

Tongue Enlarged

Result: Appearance changed; cheeks sunken; lines in "collapsed face" speech difficult from enlarged tongue.
Prevention and Treatment: Immediate or early construction of dentures after loss of teeth.

*This is the tenth chart in the third series of charts intended for the use of the dentist in explaining important dental conditions to his patients. The first and second series of charts have been published in bound form.

General Anesthesia in Dental Surgery: New Anesthetic Agents

L. F. ANDERSON, M. D., Buffalo, New York

WITHIN THE LAST few years there have come into general use by trained anesthetists several new anesthetic drugs—cyclopropane, vinethene, and the barbiturates; a new anesthetic technique—the carbon dioxide absorption technique; and new anes-

thetic apparatus—the metric gas machine with the to-and-fro or the circular filter. These additions to the armamentarium of the anesthetist have enabled not only general surgeons, but dental surgeons as well to do better, unhurried, and more com-

plete surgery. Definite percentages of gases can be given with more safety to the patient and with less expense. These improvements in the field of anesthesia have been brought about by the close cooperation existing between laboratory workers, pharma-

Fig. 1 (upper left)—Instrument tray.

Fig. 2 (upper right)—Anesthetic apparatus.

Fig. 3 (lower left)—Instruments for intrapharyngeal and intratracheal anesthesia.

Fig. 4 (lower right)—Induction of anesthesia with face mask.

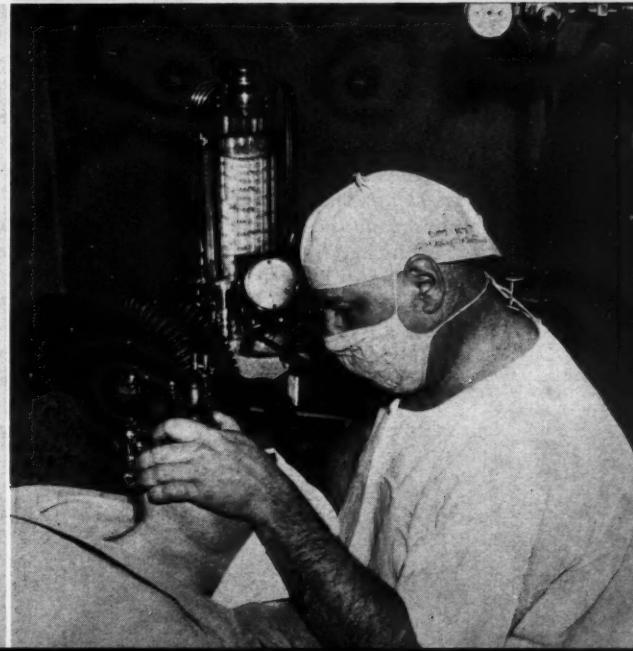
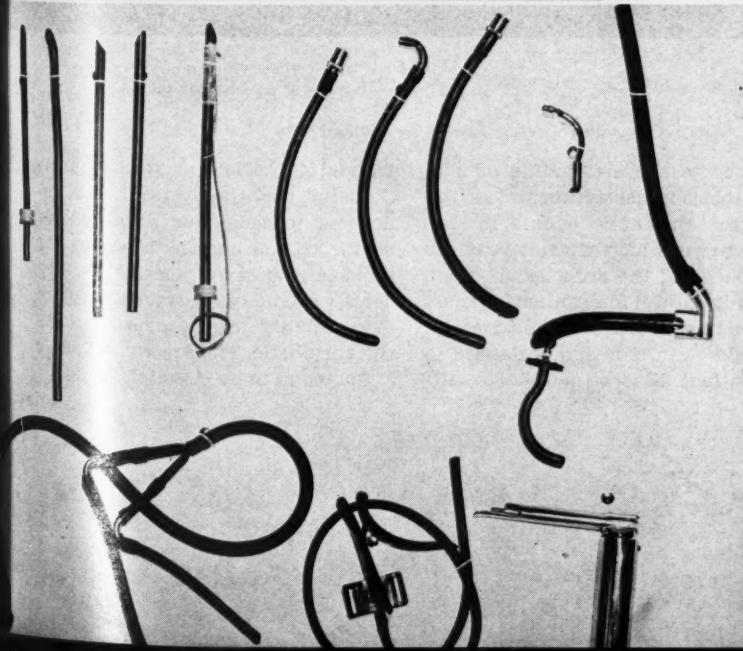
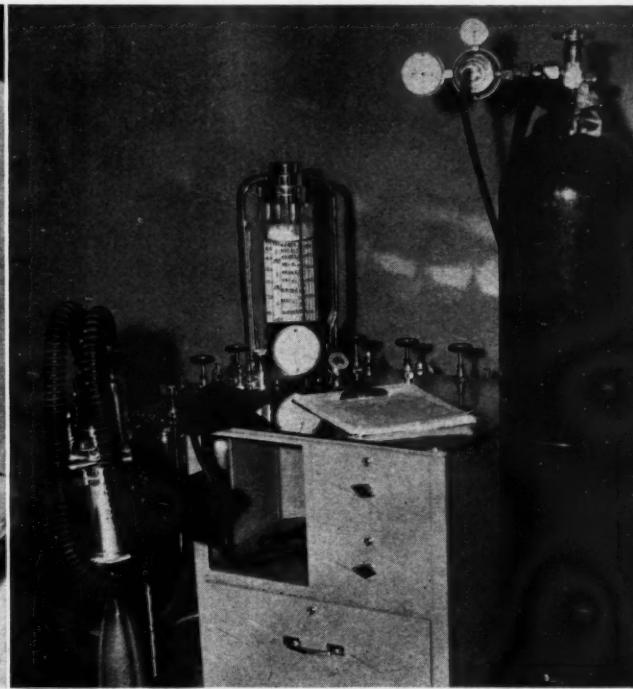
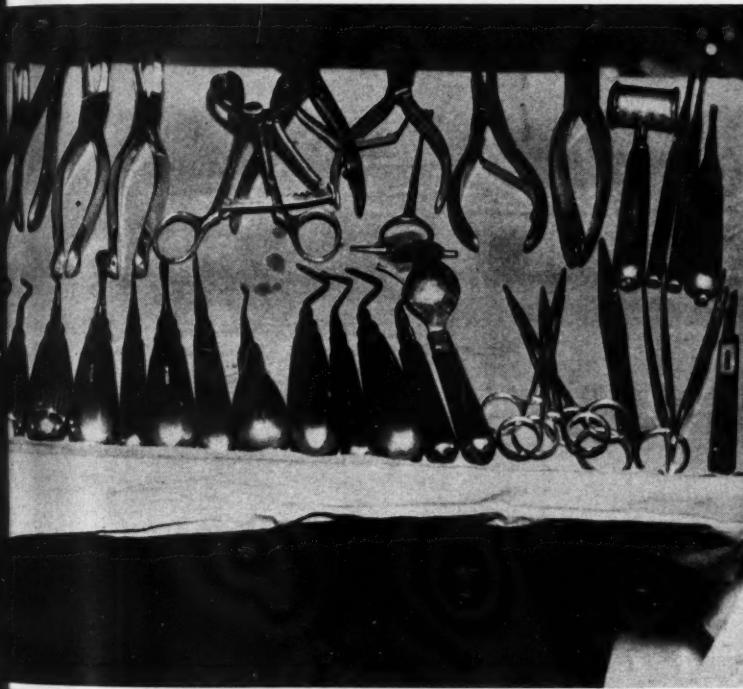




Fig. 5—Insertion of intrapharyngeal tubes.
Fig. 6—Intrapharyngeal tubes inserted.

Fig. 7—Draping of patient.
Fig. 8—Draping of patient completed.

cologists, physiologists, manufacturers of anesthesia apparatus, and the physician and dentist anesthetists.

In the major dental operations, the advantages derived by using the newer additions to the field of anesthesia are important; however, when consideration is given to the complex knowledge in anesthesia, with its im-

portance to the end-results of surgery; the complicated apparatus; the powerful anesthetic agents in use, the dosage of which can only be under the control of the anesthetist—then, certainly careful discrimination must be used in dosage and administration. It would seem only simple justice to the patient that a qualified, well-

trained physician or dentist anesthetist, rather than a technician unlicensed to compound drugs, should be the person chosen to occupy the important post of anesthetist. The dentist should not assume the double responsibility of the operation and the anesthetic. The American College of Surgeons, in its Hospital Standard-

ization Report, has held this to be important.

From a standpoint of interest when one follows the progress of dental operations, one sees the technique and success improving in an increasing degree, dependent, to a great extent, on the efficiency of anesthesia. For the minor dental operations, local anesthesia or nitrous oxide are still the anesthetic agents of choice; but in this article the major dental operations, the uncooperative patient, and the patient in poor general health for whom dental surgery is imperative are to be considered.

Indications for General Anesthesia

The indications for general anesthesia are:

1. Extensive dental operations involving both jaws.
2. Operations on acutely infected areas in the mouth in which local anesthesia is contra-indicated, especially in cases of abscesses and osteomyelitis.
3. Patients who have a susceptibility to procaine poisoning.
4. Nervous patients, especially those with increased metabolic rate, as in hyperthyroidism.
5. Nervous and uncooperative patients, especially children.
6. Patients with mechanical or pathologic respiratory difficulties in which cases local anesthesia cannot be given.
7. Large and inaccessible bone tumors and cysts, impacted teeth, and extensive alveolectomies.

Value of Hospitalization

Hospitalization of the patient for the major dental operations is of value. The necessary laboratory work can be done; sufficient and competent help are at hand; aseptic techniques can be better carried out; hospital clothing is worn by the patient during the operation and recovery from anesthesia; a hospital bed is at hand during recovery, and the patient is watched by trained attendants. When the patient is sent home he is not partly anesthetized, nauseated, and perspiring, but is fully recovered from anesthesia; bleeding has stopped; no nausea or perspiration is present, and he is in his own

dry clothing. These safety precautions essentially insure him against colds and pneumonia. Hospitals are willing and anxious to cooperate with dentists. In the Millard Fillmore Hospital at Buffalo, New York, we have a flat rate of five dollars, which covers the use of the operating room, gases used, and a bed in the ward for recovery. This has been found helpful by some of our leading dentists. Also, the professional standing of the dentist will be augmented by such a hospital association. At the hospital a patient of the highly nervous type, or children, can be given an avertin enema in the room of the patient, causing unconsciousness to occur without the sight of the operating room, gowned hospital personnel, or instruments. Such a technique is used by Mead and Chipman.¹

Consideration of Avertin

There are disadvantages to avertin: (1) Recovery is delayed, sometimes from eight to ten hours; (2) the jaw and throat are relaxed for a comparatively long time, so that pus, blood, and mucus may be aspirated into the lungs; (3) longer nursing care before and after the operation is necessary to which many hospitals object.

If avertin is given, it should be detoxified according to the technique of Doctor Paul Wood, by giving large doses of coramine or metrazol as soon as the operation is completed. This will materially shorten the recovery time from avertin anesthesia.

Cyclopropane Preferred

Cyclopropane seems to have advantages over avertin-nitrous oxide anesthesia; also it has advantages possessed by no other anesthetic agent now in use. With the carbon-dioxide absorption technique, it seems to be nearly ideal for most cases in which general anesthesia is indicated.

Effect of Carbon Dioxide

It has long been known that carbon dioxide plays an important part in respiration; that an increase in carbon dioxide percentage in the air breathed will increase the tidal air and depth of respiration (hyper-

nea), and that diminution of carbon dioxide will decrease the tidal air and make the respiration shallower (hypopnea). This diminution of carbon dioxide sometimes results in apnea or acapnea. It has also been known that if one uses a closed method of anesthesia, an excess of carbon dioxide will be developed in the anesthetic machine with resultant overbreathing, perspiration, exhaustion, and loss of body fluids.

Carbon Dioxide Absorption Technique

It remained for Professor Jackson of Cincinnati University and other research workers to evolve the theory that the amount of anesthetic agent necessary to produce full anesthesia was essentially enough to carry an operation to its completion. The only difficulty was to get rid of the excess expired carbon dioxide. Accordingly, as soda lime will absorb carbon dioxide, a canister of this chemical agent was placed in the anesthetic equipment, so that the expired air would pass through this chemical and thus result in the anesthetic agent being breathed again and again, only having to supply the metabolic rate of oxygen consumption which is about 400 cc. per minute. Thus the use of cyclopropane, which is an expensive gas, was brought into common use for every class of patient, rich or poor.

The advantages of the carbon dioxide absorption technique are:

1. Respirations are quieter and shallower.
2. Perspiration is greatly lessened, eliminating loss of body fluids.
3. Body heat is retained by both the rebreathing of the expired air, and also the chemical action of the soda lime on the expired carbon dioxide which generates a small amount of heat.
4. The dangers of lung complications are lessened.
5. Circulatory disturbances and shock are infrequent.
6. Explosions are virtually impossible from static electricity owing to the increased humidity in the closed system of the anesthetic machine.
7. The need for postoperative supply of fluids, such as Murphy-drip, intravenous saline and glucose, and subcutaneous saline solution, is greatly lessened.

¹Mead, S. V. and Chipman, C. N.: Avertin-Nitrous Oxide-Oxygen Anesthesia in Dental Surgery, *Anesth. & Analg.* 15:4 (July-August) 1936.



Fig. 9—Insertion of mouth pack.



Fig. 10—Mouth pack inserted.

8. Less anesthetic agent is used, thereby greatly decreasing the cost of gas per anesthetic. My last survey showed a cost of thirty-five cents per operation for anesthetic materials, which compares favorably with the cost of ether by the drop method on an open mask.

Cyclopropane²

History — Cyclopropane, a gas known since 1882, was discovered by Freund. In 1929 Lucas and Henderson of Toronto, Canada, produced it on a commercial scale. In 1932 Doctor Ralph Waters of Madison, Wisconsin, began to employ it and laid down the rules and technique for its use. In cooperation with leading anesthetists all over the United States, its use has exceeded 100,000 cases and numerous reports have been issued in the medical journals and at the Congresses

of Anesthetists of the International Anesthesia Research Society.

Description — This gas is a simple cyclic hydrocarbon (trimethelene) prepared by reducing an alcoholic solution of trimethelene bromide in the presence of metallic zinc. It is colorless; has a mildly pungent and sweet odor; it has a density of 1.46; it does not deteriorate in storage. It is somewhat explosive, but no more so than drop ether, nitrous oxide-oxygen-ether or ethelene-oxygen.

Precautions — Buchman and Wardell make the following recommendations for safety in its use:

1. Increase the relative humidity of the surgery to 54 per cent or greater.
2. Determine relative humidity and record readings at regular intervals.
3. Insure proper humidification within the anesthetic equipment.
4. Do not permit open flames, smoking, or the use of high frequency equipment and electrical cauteries near the anesthetic apparatus.

Phases of Cyclopropane Anesthesia

— Doctor Floyd Romberger³ of Lafayette, Indiana, states that to accept the same standards in the stages of anesthesia with cyclopropane as with the more slowly acting anesthetics is erroneous, and he divides cyclopropane anesthesia into three

stages: (1) induction, (2) moderate anesthesia, and (3) deep anesthesia.

Phase 1 — When the lid reflex disappears, pain sensation disappears and light anesthesia begins.

Phase 2 — When the oscillation of the eyeball becomes less, to the point of cessation and central fixation, really deep anesthesia begins.

Phase 3 — With a properly fitted mask, watch the breathing bag. As the anesthesia deepens, the respiratory excursion becomes less and less until it finally ceases. At this point under a proper technique, the patient is still pink and the pulse is usually unaffected. Respiratory paralysis occurs an appreciable measured length of time before obliterative narcosis is reached. On increasing the oxygen, respiration is resumed spontaneously. It is never necessary or desirable to carry a patient to the stage of respiratory arrest even though no great danger exists in so doing.

Advantages of Cyclopropane — The advantages of cyclopropane anesthesia are:

1. Induction is not accompanied by a feeling of suffocation, ringing in the ears, and falling sensation as in nitrous oxide-oxygen anesthesia. The odor is not disagreeable.
2. There is no oxygen want. Cyclopropane is given in about a 15 per cent concentration with 85 per cent

²Griffith, H. R.: Cyclopropane Anesthesia, Canada M. A. J. 3:157-160 (August) 1934.

Knight, R. T.: Cyclopropane Anesthesia in Obstetrics, Anesth. & Analg. 15:63-66 (March-April) 1936.

Raginsky, B. B. and Bourne, Wesley: Effects of Cyclopropane on Normal and Impaired Liver, Canada M. A. J. 31:500-501 (November) 1934.

Romberger, F. T.: Signs and Phases of Cyclopropane Anesthesia, Anesth. & Analg. 14:65-68 (March-April) 1935.

Shackell, L. F. and Blumenthal, R. R.: Gaseous Anesthetics; Effects of Cyclopropane on Healthy and Tubercular Rhesus Monkey, Anesth. & Analg. 13:133-142 (July-August) 1934.

Waters, R. M. and Schmidt, E. R.: Cyclopropane Anesthesia, J. A. M. A. 103:975-983 (September 29) 1934.

³See footnote 2, fourth reference.

of oxygen. We do not give just enough oxygen to keep the patient alive as with nitrous oxide-oxygen anesthesia; but, on the other hand, only enough cyclopropane is given to produce anesthesia, allowing a far greater amount of safety and eliminating the dangers caused by anoxemia.

3. It is not a circulatory depressant in therapeutic dosage. When lethal doses are given, the respiratory depression is predominant.

4. Respirations are not labored; but on the other hand, quiet and shallow, thus facilitating upper abdominal operations and chest surgery.

5. The lethal dose is at least twice the anesthetic dose. Shackell and Blumenthal⁴ made some interesting experiments with rhesus monkeys and established the facts concerning lethal dosage.

Disadvantages of Cyclopropane—The disadvantages of cyclopropane anesthesia are:

1. It is a potent agent, and should only be used by qualified anesthetists.

2. The respiratory depression symptoms are masked if cyanosis is considered, as cyclopropane patients are always pink; however, breathing may be suspended for some time without harm. Artificial respiration, oxygen, or carbon dioxide-oxygen quickly bring the patient back to normal.

3. Some surgeons believe that there is more bleeding when this agent is used.

4. At present it is slightly costlier than other anesthetics; but when the relatively small amount of the drug is considered, the cost is not appreciably greater.

Conclusions about Cyclopropane—We may reasonably say that in cyclopropane we have an anesthetic agent that is relatively safer than the agents now commonly used; induction is easier; complications are less frequently encountered; recovery from anesthesia is better; and psychic shock is eliminated to a great degree. We must, however, guard against this agent being placed in the hands of others than experienced anesthetists on account of its potency. The dangers of explosions must be considered and guarded against, and careful records kept of complications and mortality.

⁴See Footnote 2, fifth reference.

If these precautions are used, cyclopropane should gain in favor and its use become general.

Vinethene⁵

History—Vinyl ether is another anesthetic agent that has gained wide popularity and has been extensively studied by prominent physician anesthetists and research workers. C. D. Leake, and Major and Ruigh showed it to have advantages. On account of its volatility and its deterioration when exposed to light and air, 3.5 per cent absolute alcohol was added, and this drug was marketed under the trade name of "Vinethene."

Description—It is a clear liquid, colorless, possessing a slight garlicky odor. Like cyclopropane, it is inflammable. Decomposition takes place rapidly on exposure to light and air. The unused contents of a bottle should be discarded. When marketed it has a date stamped on the container, after which it should not be used. The ratio of the anesthetic dose to the lethal dose is as 1 to 2.4. For ethyl ether the ratio is as 1 to 1.5; therefore, it appears that vinethene is somewhat safer than ether. Relaxation takes place rapidly and recovery is somewhat like recovery from nitrous oxide-oxygen anesthesia with rarely any nausea or vomiting. Experiments tend to show that there is less loss of muscle tone in involuntary muscles when vinethene or cyclopropane is used, thus favoring the use of either of these in obstetrics and preventing surgical shock by vasodilatation. It can be used on an open mask by the drop method or in an anesthetic machine with oxygen.

Advantages of Vinethene—The advantages that have been reported are:

1. Simplicity of administration.
2. Quick, smooth induction, and rapid recovery.
3. It affords rapid and adequate relaxation.
4. There is rarely nausea or vomiting postoperatively.
5. It is rapidly eliminated and because of its volatility, it is controllable.
6. There is little laryngospasm or coughing.
7. A change can be made to ether

⁵Marvin, F. W.: Clinical Use of Vinethene. Anesth. & Analg. 14:257-262 (November-December) 1935.

maintenance after induction with vinethene.

Disadvantages of Vinethene—The disadvantages are:

1. There may be an increase of saliva.
2. On account of its potency, a smooth anesthesia for long cases is difficult to maintain without the use of a delicate control mechanism for dosage. This can be had in metric anesthetic machines now on the market by flowing oxygen over or through vinethene.
3. Chemical changes occur when exposed to light or air. Unused vinethene should be discarded.
4. In warm climates it volatilizes too rapidly. It should be kept out of the sun and away from radiators in the operating room.
5. It should not be used where there is liver disease or lung disease, or on an open mask in long operations; however, Wesley Bourne and Sparling of McGill University state that vinethene shows little harm to the liver.

Special Uses for Vinethene—Special uses are dental surgery, reduction of fractures, minor surgery, and obstetrical cases, especially in the home when a cumbersome anesthetic machine cannot be had or in the country when all that is needed for vinethene anesthesia is an open mask and this anesthetic agent.

The Barbiturates⁶

The barbiturates as a group have had a great deal of attention from research workers and clinicians. Numerous men have thought that eventually the ideal anesthetic would be injected intravenously; the patient go to sleep in his room and wake up some time after the operation back in his bed. He would be spared the psychic shock of being taken to the operating room with its disagreeable effects, such as the sight of gowned operating room personnel, odors, instruments, clinic conversation.

The search for an ideal intravenous anesthetic has been intensive. A few of the drugs on the market should be mentioned: sodium amytal, nembutal, pernoston, sodium alurate, evipal, pentothal sodium. These few examples of barbiturates all have

⁶Corylos, P. N. and Bass, S.: Evipal Anesthesia in Thoracoplasties. Anesth. & Analg. 15:68-71 (March-April) 1936.



Fig. 11 (upper left)—Extractions.

Fig. 12 (upper right)—Insertion of intratracheal tube.

Fig. 13 (lower left)—Tracheal tube inserted.

Fig. 14 (lower right)—Complete operating room set-up.

some of the same advantages and disadvantages. With sodium evipal and pentothal sodium, the duration of anesthesia is considerably lessened. These last two drugs have attained a wide popularity for intravenous use.

Advantages of Barbiturates—1. Induction takes place in bed. The only sensation is that of the needle puncture. The patient is asked to count

while the injection is being made and falls asleep quickly with no disagreeable sensations.

2. Respirations are quiet and shallow.
3. Less bleeding is encountered.
4. Postoperative vomiting rarely takes place.
5. Postoperative sleep from which the patient awakens as from a natural

sleep occurs but is variable in duration.

Disadvantages of Barbiturates—1. The dosage is variable. Some patients cannot be put to sleep with a barbiturate safely.

2. A marked fall in blood pressure is frequently encountered, sometimes becoming dangerous.

3. Respiratory obstruction may

take place as a result of an early relaxation of the tongue and jaws. An airway should always be on hand.

4. The pulse may become imperceptible.

5. Restlessness sometimes resembling delirium and requiring restraint at times occurs.

6. The period of postoperative sleep may be prolonged and may resemble a uremic or diabetic coma.

It will thus be seen that any intravenous or rectal anesthetic that has as one of its characteristics a prolonged postoperative sleep will require special attention as to pulse, maintenance of the airway, color, position, the placing of hot water bottles, and taking care that the patient is not left alone, as they have been known to get out of bed and cause injuries to themselves while still unconscious. Stimulants, especially ephedrine, coramine and metrazol should be kept handy.

Technique for Dental General Anesthesia

In dental general anesthesia our method of choice is the introduction of intrapharyngeal or intratracheal tubes through the nose.

1. Induction of anesthesia is accomplished by the face mask method with a 15 per cent concentration of cyclopropane and 85 per cent oxygen, to which a small amount of vinethene or ether may be added if relaxation is not easily had.

2. When the eyeballs have ceased oscillating, the face mask is removed and the nasal tubes, which have previously been well lubricated with white vaseline, are inserted.

3. These are then connected to the anesthetic apparatus with our special attachment.

These nasal tubes should be as large as the nasal passages will accommodate. Also, the tube leading to the anesthetic machine should be approximately the size of the trachea, so that no diminution of respiratory volume takes place, which might favor atelectasis. The length of the nasal tubes should be about 5½ inches or long enough to reach into the nasopharynx and make virtually a continuous airway to the larynx, thus eliminating the nasal and oral passages.

4. The mouth pack should next be inserted. There are a few points to be observed when placing this pack:

a. The tongue should not be shoved back by the packs, rather the surgeon should pack toward the roof of the mouth and back, thus allowing the tongue to be kept forward.

b. Large enough packs should be used to shut off completely all air supply through the mouth. Small packs may get into the esophagus or far back into the pharynx and be difficult to recover.

c. When this mouth pack is properly inserted, a closed-system of anesthesia is had, which is the easiest to control.

d. This will also prevent dental restorations, pieces of teeth, blood, pus, and mucus from entering the lungs. Many lung abscesses and other pulmonary complications have been caused by inattention to the mouth pack.

e. With these tubes and packs properly in place, a continuous airway to the larynx is assured. We are not continually confronted with patients who become cyanosed, with pupils dilated, pulse slow, and respirations stopped, which was a common occurrence when nitrous oxide-oxygen was used for major cases without special attention to the airway. Slight pressure on the lower jaw or flexion of the neck has caused many cases of serious cyanosis. The greater margin of safety with cyclopropane has eliminated many causes for apprehension as to the condition of the patient.

f. Care must also be taken when opening the mouth gag so that no injury to the gums, teeth, or mouth may be caused.

g. A motor-driven suction apparatus is essential to good work, facilitating better visibility through the removal of all blood, pus, and mucus.

5. Our patients are generally operated on in the prone or semi-prone position. Work may be done in the sitting position if considered necessary.

6. After the insertion of the tubes, when anesthesia again reaches Phase 2 as described by Romberger, draping of the patient is done. This can completely cover the neck and head, leaving only the mouth exposed. The anesthetist can be entirely away from

the field of operation, so that the dental surgeon can work at the side of or at the head of the operating table.

7. The condition of the patient can be accurately checked by the anesthetist by (1) the blood pressure apparatus which gives pulse and blood pressure readings; (2) the breathing bag on the anesthetic machine which gives respiratory rate, rhythm, and volume. It also indicates respiratory obstruction if present; and (3) the color of the blood in the operative field is a guide to the oxygenation of blood and warns us if cyanosis from any cause exists.

8. The anesthetist can aid the dental surgeon by maintaining the head of the patient in proper position and holding the lower jaw, especially in extractions of impacted teeth. All this can be done under the drapes and will not interfere with the aseptic technique.

Advantages of Method—The duration of anesthesia with this method is one of its advantages. We have kept patients under anesthesia for four hours, during which time several extractions and restorations or other surgery have been done. This is important in children as all the teeth can be put in good order at one operation. By not having to wait at the hospital until the patient has entirely recovered from anesthesia, the dental surgeon can save valuable time. The patient is left with competent hospital internes and nurses until fully recovered from anesthesia.

Maintenance of Oxygen Supply—Probably the most important factor in the immediate postoperative care of a surgical patient is the maintenance of an adequate airway so that no obstruction to respiration will occur. This maintenance of the oxygen supply to the lungs has not been given the consideration it deserves.

Yandell Henderson⁷ states:

Asphyxia is the most frequent and the most important of all pathological processes. This is true because respiration—the exchange of oxygen and carbon dioxide and the production of energy—is the most fundamental process of life. Any disturbance of the circulation, any alteration of the cells of any tissue almost inevitably involves an alteration of the respiratory activity of one or more

⁷Henderson, Yandell: Fundamentals of Asphyxia, J. A. M. A. 101:261-266 (July 22) 1933

organs, or of the body as a whole. Evidently asphyxia is something much broader than the acute conditions that are being discussed today. It is not only carbonmonoxide poisoning, asphyxia of the new-born, the effects of hemorrhage and anemia, or the state of a patient after prolonged anesthesia; it is the state that develops in one way or another in the majority of all human beings as death from disease approaches. Unless one is burned alive, the tissues of one's body always die of asphyxia.

We must, therefore, realize the importance of maintaining the oxygen supply to the lungs and be cognizant of the causes of suboxygenation of the blood. Numerous authorities have stated that at least 65 per cent of all postoperative complications are due to respiratory difficulties. Cardiac complications are far less frequent. Any interference with the free passage of air into and out of the lungs is dangerous and must, if possible, be corrected at once. This is too frequently disregarded by nurses and even surgeons. All sorts of hypodermic injections (digitalis, coramine, adrenalin, caffeine) are given when the mere proper holding up of the jaw or the introduction of a mechanical airway will at once correct the conditions causing the respiratory obstruction.

Causes of Respiratory Obstruction and Suboxy- genation

Several causes of respiratory obstruction and suboxygenation are given to illustrate their frequency:

1. The lips fall in and act as a valve in edentulous patients.
2. The jaw and tongue fall back.
3. Faulty position of the head, es-

specially flexion of the neck, which may be caused by pressure on the lower jaw.

4. Excessive secretion of mucus.
5. Aspiration of vomitus into the lungs.
6. Laryngospasm or bronchospasm.
7. Edema of glottis or lungs.
8. Collection of blood or pus in the mouth or throat.
9. Too tight dressings or gowns around the neck or dental mouth packs improperly placed.
10. Splinting of the diaphragm by too tight dressings or casts.
11. Pathologic swellings, such as enlarged tonsils and adenoids, nasal growths, goiter, cellulitis of the neck, abscess of neck, tonsillar abscess.
12. Disease of the lungs or pleura, such as tuberculosis, empyema, pleura effusions, fibrosis of the lungs.
13. Heart disease, such as coronary disease, ventricular fibrillation, dilation of the heart muscle.
14. Excessive preoperative medication causing postoperative respiratory depression.
15. Paralysis of intercostal muscles or diaphragm as in some cases of spinal anesthesia.
16. Extreme fall in blood pressure causing circulatory and respiratory depression.
17. Atelectasis⁸ which must be recognized and prompt, efficient treatment instituted.

Conclusion

When a patient is returned from the surgery, there is a responsibility

⁸Corylos, P. N., and Birnbaum, G. L.: Studies in Pulmonary Gas Absorption in Bronchial Obstruction, Am. J. M. Sc., March, 1932, pp. 317-326.

to guard against respiratory obstruction and resultant cyanosis, asphyxia, anoxemia, atelectasis, surgical shock, and collapse. Blood that is not aerated with oxygen has a dark purple tint, contrasting with the bright scarlet of fully aerated blood. The slightest deviation from normal color demands attention. The surgeon or anesthetist should be immediately notified when abnormalities exist. In the meantime, the finger should be swept around the mouth and back into the pharynx to remove any obstructing material; the tongue should be grasped with gauze between the thumb and index finger and drawn forward; the position of the head altered for easier breathing, and a mechanical rubber or metal, nasal or pharyngeal airway inserted.

If vomiting occurs, the nurse must never hold the jaw and chin up and forward with the mouth closed, but should turn the patient's head to one side and raise the opposite shoulder. This will allow the vomitus to run out of the mouth into a towel or basin and so prevent aspiration of foreign material into the lungs. There have been numerous deaths reported which were caused by obstruction of the trachea and bronchi with aspirated vomitus. The suction power of the lungs is remarkably strong. A case recently brought to autopsy, revealed aspirated vomitus in the smallest bronchioles. If persistent vomiting occurs, it is well to have a tonsil suction machine handy to aid in removing the vomitus.

It is also imperative not to leave a patient until consciousness and reflexes are fully restored.

468 Delaware Avenue.

Increased Strength of Amalgam Restorations

FRANCIS A. BULL, D. D. S., Milwaukee

IT HAS BEEN ESTIMATED that 75 per cent of all the restorations placed in teeth are amalgam. This material has been used for the last hundred years, and dentists have reached a high degree of skill in the manipulation of silver amalgam and in the cavity preparation of teeth to be restored with this material. The manufacturers and the U. S. Bureau of Standards have been alert to give the practicing dentist a better product with which to work. Rigid specifications have been made to insure the dentist that the alloy he buys has the properties that are now considered essential, such as expansion, quick-setting, and low flow. Certainly better amalgam restorations are produced today than ever before; this does not mean, however, that further effort need not be made to improve both amalgam and amalgam restorations in every scientific manner possible.

The dentist is often confused by the fact that tests which are used to determine the standard of amalgam are entirely different from the tests given to other metals used in the mouth. The tests are not the same because amalgam does not possess the properties of such metals as gold and silver, and in a comparative test with these metals the results would be detrimental to the free use of amalgam. When cavities of essentially the same dimensions and subject to the same forces are restored with either silver amalgam or cast gold, both materials must have approximately the same physical properties if the two restorations are to give equal and adequate service in the mouth. A properly prepared cast gold restoration does not fracture or chip under the various stresses and forces it is subjected to in the mouth. Likewise, if a cast restoration is properly adapted to the margins when it is inserted, it will remain so, barring accidents or recurrence of decay. Amalgam does not behave in a like manner. To anyone

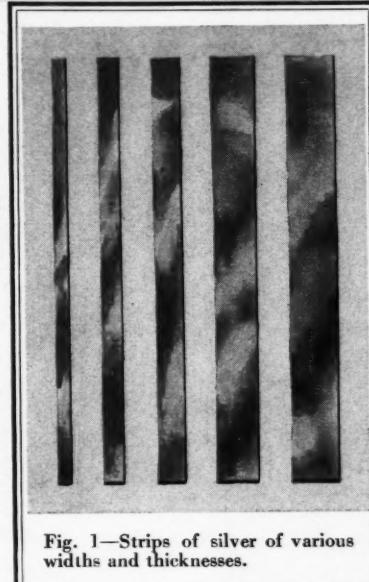


Fig. 1—Strips of silver of various widths and thicknesses.

quently experienced. The causes of the failures of amalgam in these restorations should be studied with a view to their correction.

Transverse Weakness of Amalgam

The chief difference in the strength of silver, amalgam, and cast gold lies in the transverse or bending strength. In a previous report¹ I showed that amalgam in such dimensions as dentists ordinarily use has almost no transverse or bending strength. In this respect silver amalgam is similar to dental cement. We have all had the experience of trying to bend the lead used in a lead pencil and found that it immediately breaks in two. The same thing happens to dental cement or silver amalgam when bending or transverse pressure is applied to it. Cast gold does not behave in this manner. That is why gold inlays do not fracture at the neck or constricted portions of the inlay. Amalgam in the dimensions used in restorations can easily be fractured by finger pressure; naturally, then, it can be fractured in the mouth.

Technicians say that to prevent its fracturing in the mouth, the restoration should be given more bulk by increasing the dimensions of the cavity in the region of the neck of the restoration. This would be fine, if it would work; but it does not, for two reasons: (1) Even if the cavity dimensions were cut twice the size in the region of the neck for an amalgam restoration than for cast gold, the amalgam restoration would still be found lacking in transverse or bending strength as compared with the inlay. In other words, the ratio of strength increase to the enlarged size of the mass is not high enough in either cement or amalgam. (2) The wider the neck is cut on the occlusal surface of a tooth,

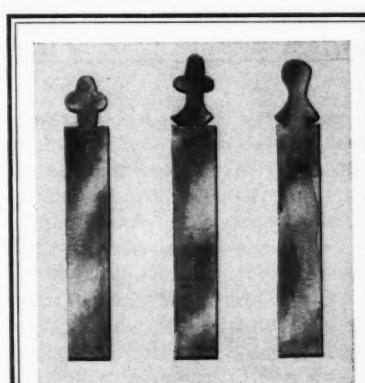


Fig. 2—Reinforcing material cut in same general shape as cavity, but smaller than cavity.

¹Bull, F. A.: Read before the section on Operative Dentistry at the Seventy-Ninth Annual Session of the American Dental Association at New Orleans, November, 1935.

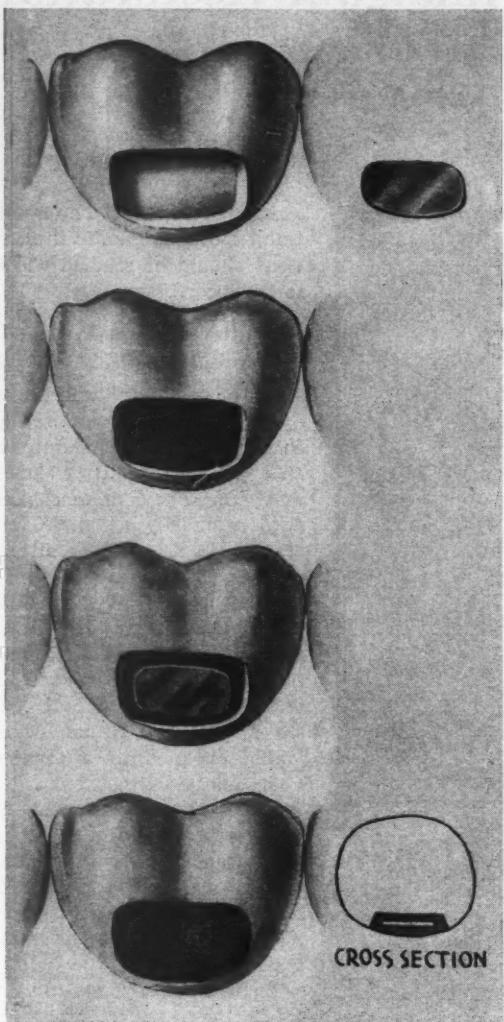


Fig. 3—Preparation of a simple buccal cavity.

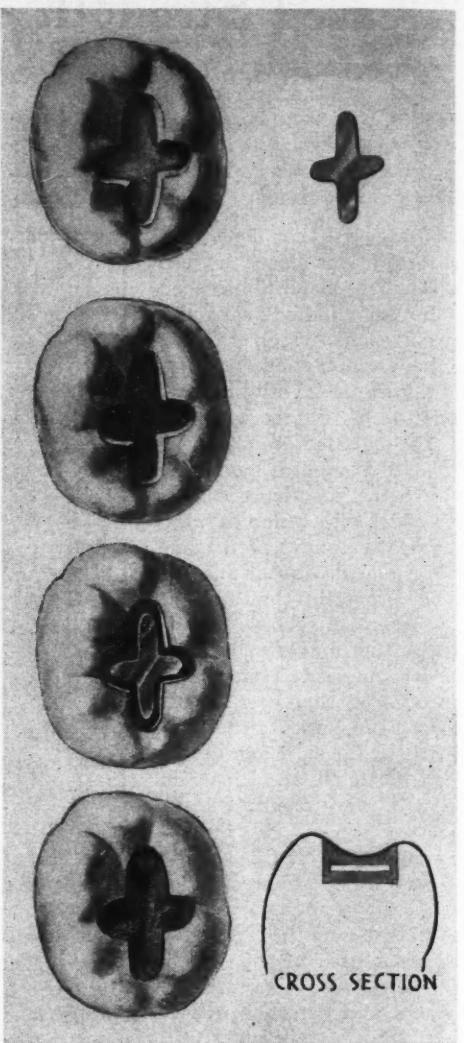


Fig. 4—Preparation of a simple occlusal cavity.

the more difficulty is encountered in the direction of the enamel rods in the cavity preparation.

Amalgam Pulls Away from Cavity Wall

In addition to the transverse weakness of the amalgam restoration, silver amalgam in the mouth tends to pull away from the cavity wall. This is sometimes called, "balling up." Amalgam does not do this at room temperature, but in the mouth body heat and hot foods and drinks cause the amalgam slowly but progressively

to pull away from the cavity wall, forming high spots or elevations in some other part of the mass. It appears that the internal stresses present in the amalgam are gradually released by the action of heat. More than 50 per cent of an amalgam restoration is the liquid element mercury, and this undoubtedly accounts for the peculiar behavior of amalgam restorations in the presence of elevated temperatures.

Schotts, a metallurgical engineer, has done some original research on the behavior of amalgam at mouth

temperature. An amalgam, for example, which will flow 4 per cent at room temperature will flow approximately 30 per cent at 98 degrees or mouth temperature. This is cited to show that the behavior of amalgam in the mouth is entirely different from its behavior in a model or die on a laboratory bench.

Objectives in Amalgam Improvement

From the foregoing it will be seen that improvements in amalgam restorations must have two main ob-

jectives: First, to increase the strength, and second, to eliminate the distortion.

Silver Reinforcement

From my studies and experiments it appears that the proper reinforcing of amalgam will furnish the necessary transverse strength that amalgam requires and at the same time eliminate the objectionable distortion of the amalgam. As steel has been found to be the best reinforcing element for concrete, silver has been found to be the best reinforcing element for amalgam. A chemical union is obtained between amalgam and the silver reinforcing element which is stronger than the mechanical or frictional bond between concrete and steel. The same principles that govern the reinforcing of concrete apply to amalgam. Naturally the form and placement of the reinforcing element in amalgam must be governed by the size and shape of the cavity.

Technique

The technique that has proved practical in my hands is as follows:

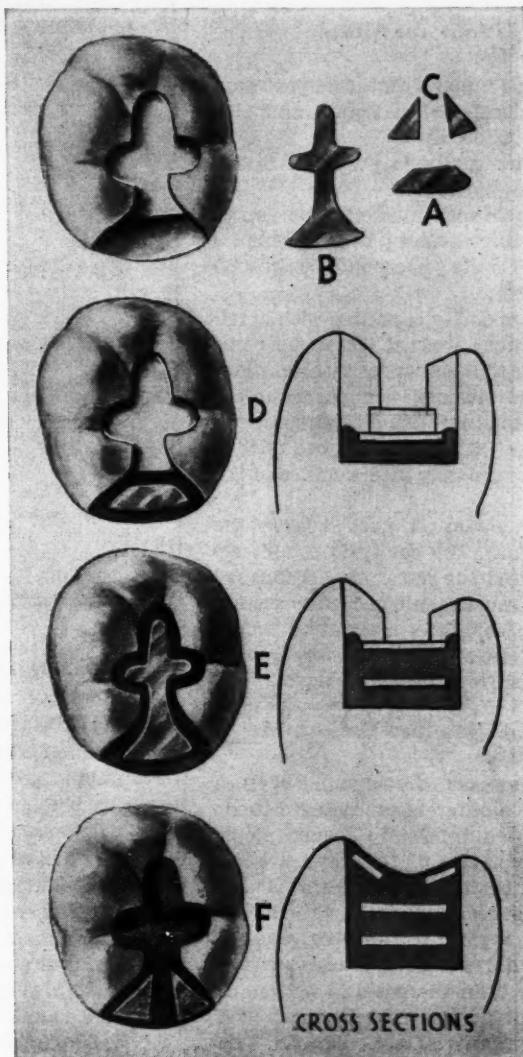
1. Sterling silver, purchased from any manufacturing jeweler, is rolled into various thicknesses from 20/1000 to 35/1000 of an inch.

2. It is then cut into strips of various widths from 1 mm. to 5 mm. (Fig. 1).

The silver is cut into these various thicknesses and widths because it is easier to fashion the silver plate to conform to the cavity outline from a strip than from a wide plate of the material; moreover, the various thicknesses permit the selection of one that will conform to the depth of the cavity. A thin strip is used for a shallow cavity and the thicker ones for the deeper cavities; like wise the wider strips are used in more extensive cavities.

3. At all times the reinforcing element is cut in the same general shape as the base of the cavity but considerably smaller (Fig. 2). This is necessary because the small silver plate or reinforcing element must be tapped into the freshly packed amalgam, and unless there is sufficient room for amalgam to flow between the plate and the cavity wall the plate could not be properly seated. In other words the silver reinforcing element resembles an inlay that would fill only about half

Fig. 5—A, Plate coextensive but smaller than the gingival seat used in proximal portion of cavity in region of gingival seat; B, plate coextensive but smaller than occlusal outline of cavity used in occlusal part of cavity; C, triangular-shaped plates used at cavosurface angles; D, gingival seat plate placed on amalgam; E, occlusal plate placed on amalgam; F, triangular-shaped plates placed in region of cavosurface angle, only deep enough to permit small amount of amalgam to be packed over them.



the cavity.

Cutting of Reinforcing Material—The cutting of the reinforcing plates is a simple procedure after a little practice. Selecting a silver strip of the proper width simplifies it. Many of the plates can be cut with a pair of snips; others are roughed out with a carborundum disc or stone. The beginner usually encounters difficulty in attempting to make the plates fit the cavity too closely. This takes too much time and is entirely unnecessary. The plates must be considerably smaller than the cavity; this gives plenty of

leeway in roughing out or cutting the plates. It is preferable to have the plates too small rather than too large.

4. The reinforcing plates should be ready before the amalgam is mixed.

5. After the operator has begun to pack the amalgam in the cavity and is ready to place the reinforcing plate, he picks it up with a foil carrier and presses the plate into the amalgam.

6. With a gold foil mallet and blunt instrument the plate is tapped well into the amalgam. This operation takes only a few seconds.

7. Once the reinforcing plate is in

position, the amalgam is immediately packed over it.

Technique for Simple Cavities

Let us suppose that a simple buccal or occlusal cavity (Figs. 3 and 4) is to be restored.

1. The cavity is prepared in the usual manner.

2. From the end of one of the strips of sterling silver a plate is fashioned which loosely corresponds to the cavity outline.

3. The cavity is packed with amalgam, any standard technique being used, until it is about two-thirds filled.

4. The silver plate is placed on the amalgam, and with a mallet and instrument, it is gently tapped until it is approximately in the center of the cavity.

5. Amalgam is packed over the plate until the cavity is completely filled, and the restoration is finished in the usual manner. A cross section of the complete restoration would show a silver plate completely embedded or surrounded by amalgam.

Technique for Compound Cavities

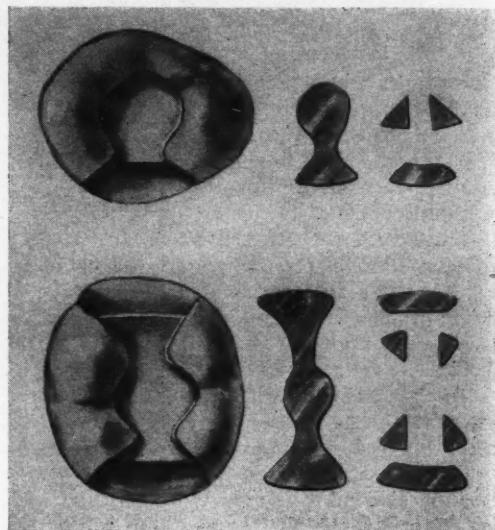
In the case of compound cavities (Fig. 5) a different procedure is used:

1. Three differently shaped plates are used: (1) A plate coextensive but smaller than the gingival seat is used in the proximal portion of the cavity in the region of the gingival seat (Fig. 5, A). (2) A plate coextensive but smaller than the occlusal outline of the cavity is used in the occlusal part of the cavity (Fig. 5, B). (3) Triangular-shaped plates are used at the cavosurface angles (Fig. 5, C). The function of these plates is as follows: The plate at the gingival seat is to prevent distortion of the amalgam in that area. The occlusal plate is to give the completed restoration transverse strength so as to prevent fracture and also to prevent distortion of the amalgam. The triangular-shaped plates are used to prevent shearing of the cavosurface angles and also to prevent distortion.

2. When a mesio-occlusal cavity is prepared, these plates are cut as shown in the diagram.

3. With the matrix adjusted, amalgam is well packed over the gingival seat.

Fig. 6—Preparation of M-O-D cavity. Occlusal plate cut to extend into both mesial and distal portions of cavity; that is, occlusal plate corresponds in outline to cavity.



4. The gingival seat plate is placed on the amalgam (Fig. 5, D), and tapped well against the gingival seat.

5. Amalgam is immediately packed over it and the remainder of the cavity until about two thirds of the occlusal portion has been packed.

6. The occlusal plate is placed on the amalgam (Fig. 5, E) and tapped with a mallet and blunt instrument until it is approximately in the center of the occlusal portion of the cavity.

7. Amalgam is immediately packed over it and completely fills the cavity.

8. The triangular-shaped plates are placed in the region of the cavosurface angle and only deep enough to permit a small amount of amalgam to be packed over them (Fig. 5, F).

9. When set the amalgam restoration is finished in the usual manner.

Should any part of the sterling silver plate be exposed on the restoration by carving, no harm will be done except that the silver will discolor a little more than the amalgam.

10. There is a difference in the reinforcing plates in a mesio-occlusal-distal cavity in that the occlusal plate must be cut so that it will extend into both mesial and distal portions of the cavity (Fig. 6). In other words the occlusal plate must correspond in outline to that of the cavity.

Comments

1. All cavosurface angle plates are triangular in shape and can be cut in that shape with heavy scissors or snips. The same holds true of the gingival seat plates. The occlusal plates, however, must be roughed out with a stone or carborundum disc.

2. It must be borne in mind that the sterling silver plates are placed into the amalgam for two reasons: first, to prevent the distortion of amalgam by the action of heat, and second, to supply the strength necessary to prevent the fracture of the amalgam under masticating forces.

3. Laboratory tests show that the transverse strength of reinforced amalgam is from five to six times that of plain amalgam. This brings the transverse strength of reinforced amalgam to almost that of cast gold. These tests likewise show that plain amalgam will flow twice as much as the reinforced amalgam.

Conclusion

In the technique described the sterling silver plates or reinforcing element provide the necessary strength stability that the restoration must possess; and the amalgam seals the cavity, giving the restoration its contour.

1134 West State Street.

The Editor's Page

THERE IS a great gulf between the attitude toward general anesthesia as expressed by Doctor Anderson in this issue and the casualness and nonchalance with which some dentists view the subject. Doctor Anderson emphasizes that in certain types of extensive surgery in the mouth, for nervous patients, and for children particularly, prolonged anesthesia is sometimes indicated. He points out that a general anesthetic for dental surgery must be administered with exactly the same precautions as for any other type of surgery. This does not mean that hospitalization is indicated in routine extractions in healthy persons.

The casualness mentioned is dramatically displayed by the red neon signs that say, "Gas" in the offices of advertising dentists. People frequently stumble into these offices with hypertensive disease; with extensive kidney disorder; in the throes of acute respiratory infection—such patients are put into the dental chair and are almost asphyxiated with nitrous oxide gas. In many cases the dentist is both the operator and the anesthetist, with one eye on the patient, the other on the gas machine; with one hand on the control lever of the gas apparatus, and the other ready to grab the forceps—such a picture is not conducive to confidence. Although the worst offenders have been the advertisers, others have also been guilty. Frequently patients treated by these careless dentists do not leave the office alive. Others leave the office alive but have been so badly harmed that they die shortly afterward.

Deaths following the administration of general anesthesia for tooth removal are treated as spectacular news by newspapers. If this kind of news treatment would incite these dentists to improve their technique for the administration of a general anesthetic, the publicity, although not favorable to the profession, would be worth while.

At one time there were two deterrents that kept patients from being hospitalized for general dental anesthesia. First, the cost was prohibitive, because each separate bit of service meant a separate and often excessive fee.

Second, the hospital was regarded as a place of last resort instead of one of convenience and prevention. Now both these attitudes have changed. In the Millard Fillmore Hospital in Buffalo, New York, a flat rate of five dollars covers the cost of the operating room, the gas used, and a bed in a ward for recovery. Other hospitals throughout the country undoubtedly are following this practice. The flat fee for other types of medical service is being adopted in many hospitals. If the demand for dental anesthetic service is sufficient, hospitals will very likely be glad to cooperate with dentists in working out plans for the convenience of the patient and the dentist.

It is a form of malpractice to place a patient in a dental chair without previous physical examination, subject him to a general anesthetic, and send him on his way soon after recovering consciousness. He may be nauseated and perspiring, bleeding and still partly anesthetized. It is true that persons given nitrous oxide-oxygen anesthesia, the usual general anesthetic agent administered in the dental office, do not often have a long and stormy recovery stage. Most of them can safely be sent home in a short time. There are a few, however, who do have postoperative disturbances and would be better kept in bed for several hours or even over-night after the administration of the anesthetic.

At one time, ether and chloroform were given in the office of the dentist and physician for surgical cases. Physicians generally have ceased to give general anesthetics of any kind in their offices. Dentists still administer nitrous oxide-oxygen in their offices. This agent is too important an anesthetic in the dental office to be placed in disrepute by careless handling. Nitrous oxide-oxygen anesthesia has a significant place in dentistry. It should be used with the care it deserves. If it is administered in the dental office, preoperative care should be given; the anesthetic should be given by a trained anesthetist, preferably a dentist or physician; and provisions should be made for complete postoperative recovery.

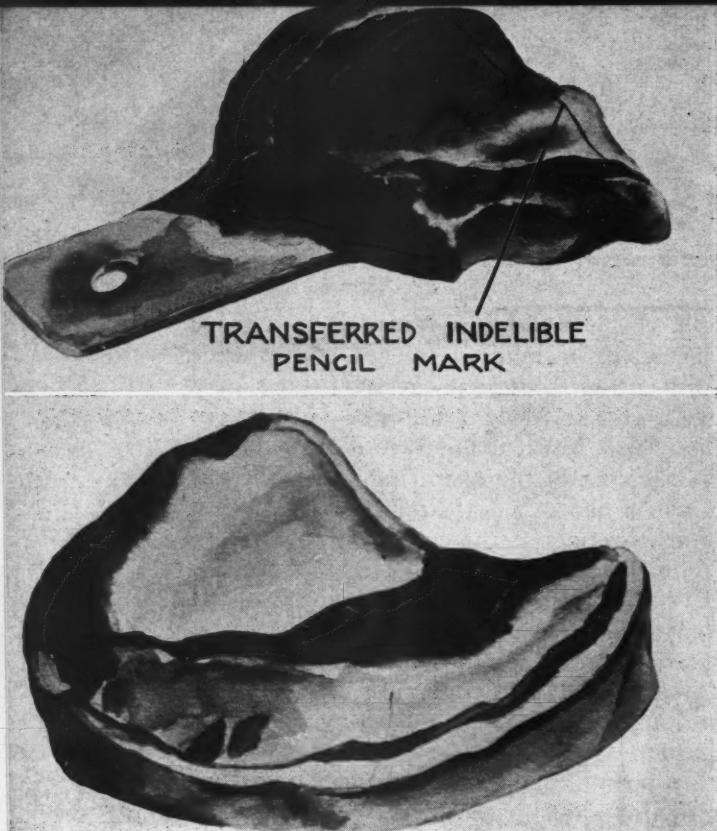
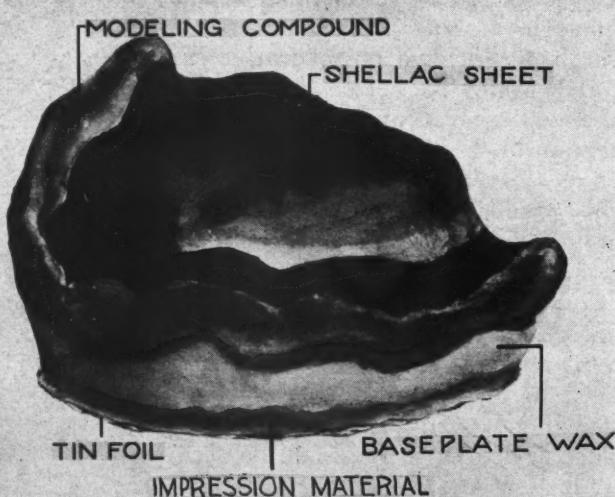


Fig. 1 (top left)—Compound snap impression. Muscle-trim by pulling patient's cheeks and lips over soft compound. Indelible pencil line transferred from marking at junction of hard and soft palates.

Fig. 2 (above)—Stone model of snap impression.

Fig. 3 (top right)—Shellac sheet adapted to snap model.

Fig. 4 (opposite)—Bite rim built of wax or compound on the shellac sheet to desired bite opening. Spread a thick mix of impression material on bite rim; cover with strips of thin tin foil, and place in patient's mouth. Bring patient into centric bite and hold until material has set five or six minutes. This stabilizes the shellac sheet impression tray.



A Rapid and Accurate Denture Technique

KARL J. HUMPHREYS, D. D. S., Los Angeles

THE TECHNIQUE TO be described depends on the type of material used for the impressions and the method of applying it. The material consists of a liquid made of oil of cloves, balsam Peru, oil of orange and rosin; and a powder composed of zinc oxide, rosin and powdered aluminum or other coloring.¹ The powder and liquid are

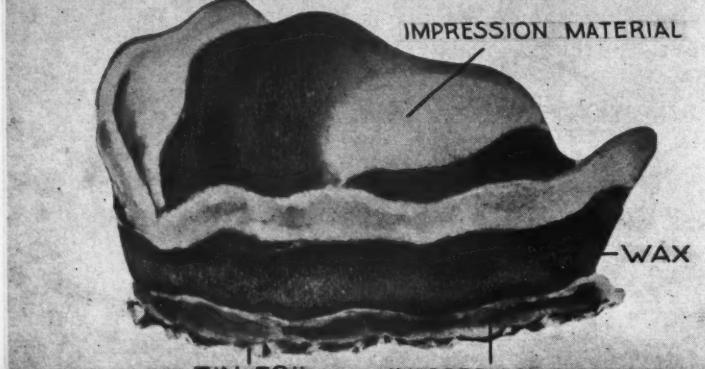
Fig. 5

¹The material used in this technique may be obtained under the name of Co-Oral-Ite Impression Material. There are somewhat similar materials manufactured under the names of Kelly's Impression Paste and Ackermann's Impression Cement, but I am not familiar with their formulas and properties.

Fig. 6

Fig. 5—Trim periphery of the shellac sheet with hot tin snips. Add soft modeling compound and muscle-trim in the mouth.

Fig. 6—Dry the palatal portion of the shellac base plate carefully with compressed air. Line this with a mixture of impression material; place in the mouth, and press firmly to place. Bring the patient into centric bite and have the bite held for five or six minutes until material has set. This constitutes an impression and bite. Try the impression in the mouth a number of times and correct the impression if necessary by drying thoroughly, adding more impression paste, and reimpresing. Check the centric bite carefully. If it is off, cut the bite rim away and retake as previously. This may be done repeatedly if necessary.



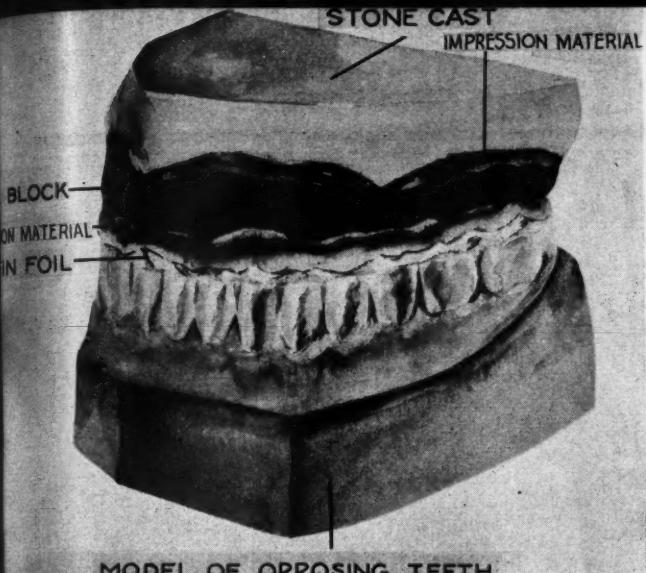


Fig. 7

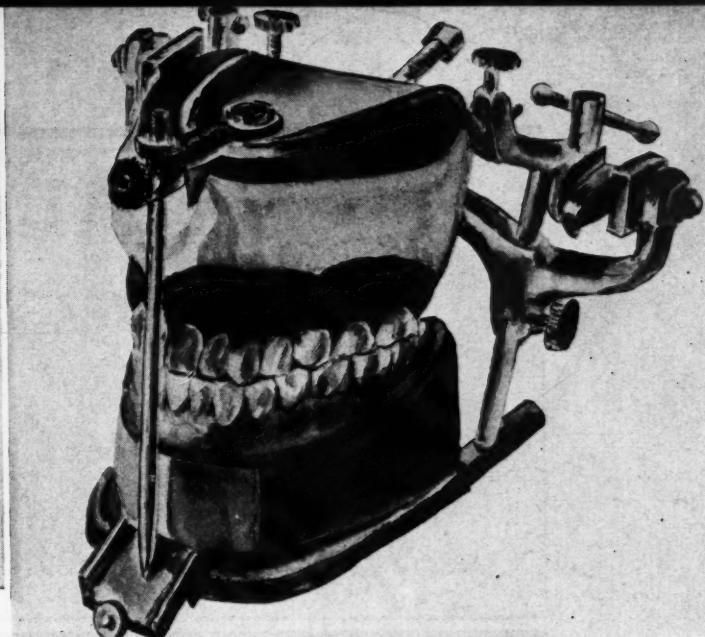


Fig. 8

Fig. 7—Box the impression and run with stone; then fit to model of the opposing teeth.

Fig. 8—Mount on an articulator; adapt a new shellac sheet to the model, and set up the teeth.

Fig. 9—Teeth, set up and ready for try-in. Check in mouth for centric and lateral bites. Some grinding may be done at this time, spotting with articulating paper.

Fig. 10—Dry the palatal portion of try-in; cover the entire surface with a mix of Co-Oral-Ite, and press to place in the patient's mouth. Have the patient close in centric and hold until material sets. Check centric bite. *This impression is not replaced on the model.* Remove, box-in on palatal side; cast stone model; then flask, pack, and cure. The occlusion of the finished case is spot-ground to all positions in the mouth.

spatulated together to form a paste of about the consistency of soft putty. This can be mixed in whatever quantity is needed for a given operation, and sets slowly outside the mouth, allowing plenty of time for manipulation. The setting is about five minutes in the mouth. There is a slight stinging sensation from the oil of cloves, so the mixes should not be too "soupy" and should be well spatulated. The use of waxed paper mixing pads simplifies the procedure as the paste is sticky and not easily cleaned from glass slabs. Eucalyptol is a solvent for the material and may be used in cleaning spatulas, hands, and so on.

The illustrations show the making of a single denture, but the technique applies equally well in making upper and lower dentures at once, working one against the other.

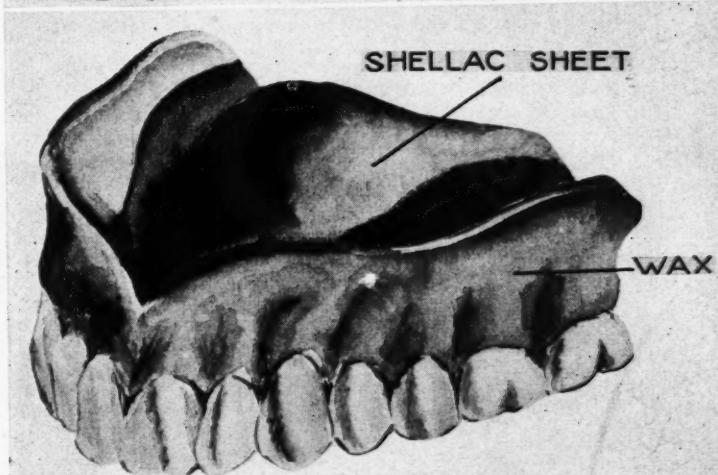


Fig. 9

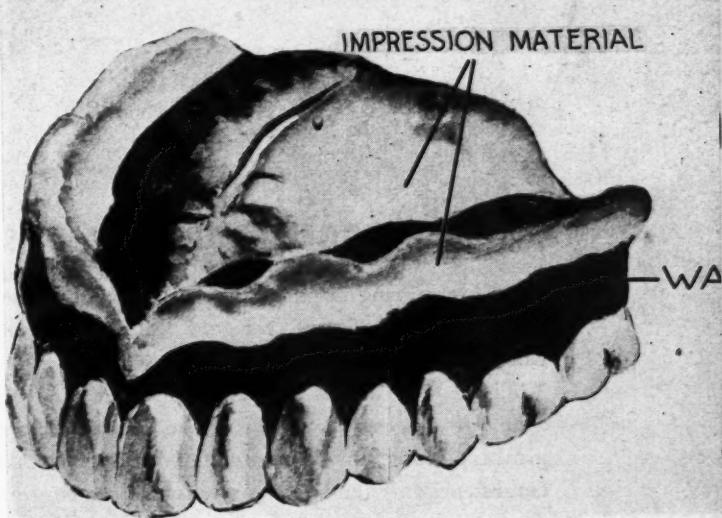


Fig. 10

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Comments of Participating Dentists in Patient Study*

(Continued)

5. As one of the participating dentists in this dental questionnaire I was very much impressed with the knowledge possessed by the public.

This poll emphasized the importance of dentists doing more educating of people at every opportunity, especially on those subjects of which the public has an incorrect conception.

We must explain in understandable language just how dental decay is brought about. The story of pyorrhea is known by only a few; charts, x-rays, models, and pictures can educate much better and faster than word of mouth.

The patient should be made to think of extraction of teeth as an operation. This will help to elevate the dental profession in the eyes of the public. Could you get the average physician to extract a splinter for one dollar? There is no question as to which is the more difficult operation.

On the subject of local anesthetics for tooth preparation the poll shows that a large part of the public is in favor of injection. The dentist should perfect his technique for block anesthesia, so that he can satisfy this demand for painless dentistry.

Regarding the duration of dental restorations, we dentists will avoid some embarrassing moments if we will explain that devitalized teeth may become abscessed at any time; that they give way; that is, become brittle in time, and, therefore, the life of a restoration cannot be foretold.

In the mouths of some patients dentures give longer service because of the quality of the foundation; that is, the density of the bone. THE DENTAL DIGEST has published an illustrated chart which patients can understand better than spoken or printed words. Use it.

The survey shows that the majority realize that teeth have a relationship to general health. Do not neglect to stress this relationship. Present your restorations as a health measure.

*These are a continuation from last month of the comments of the cooperating dentists on the study What Twelve Hundred Patients Know About Dentistry, the serial publication of which was begun in January of this year and concluded in the May issue.

Since most of the answers show that people realize that tooth paste or powder is beneficial only as a cleansing agent, we should devote enough time to show the patient how to use the proper brush, the correct way.

It is said that one picture is worth a thousand words. What the eye sees the brain will remember much longer than what the ear hears. Therefore: Dentists should supply themselves with pictures, models, roentgenograms, and charts to explain dentistry to their patients. Dentists owe it to themselves and to their patients to teach. As has been pointed out, the title "doctor" implies that.—G. J. TILLEY, D.D.S., Chicago.

6. What Twelve Hundred Patients Know About Dentistry has been an unusual and interesting survey. The number of intelligent and reasonable answers received proves that many laymen are well informed on matters pertaining to oral problems. This fact should be an incentive to the members of our profession to study thoroughly and understand the modern concept of dentistry.

Many of these questions were general; some on matters controversial; others really required opinions for each specific case. Despite this, many answers would be a credit to dental students and I may say, many practicing dentists.

The question, "What do you think causes tooth decay?" is rather catchy as it leads the patient to think there may be a cause and he has tried to hit on it. As we know there are many causative factors and considerable difference of opinion as to which ones are most causative. The question as stated was well answered.

Those answers leaving the procedure to the judgment of the operator (whether or not to use local anesthetic) are a fine expression of confidence and, of course, patient-attitude will be a factor.

"What is your understanding about pyorrhea?" Most of the patients understood it was a condition affecting the supporting tissues, and considering the number of etiologic factors, gave creditable answers.

In the question, "How long do you expect dental work that has been done to last?" I believe the "conditional"

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Psychology plays an important role in this art and we offer the following suggestions:

Do not speak of "giving gas" or "going to sleep"; instead, refer to "Analgesia" and say that it will make the patient feel more comfortable.

Mention that some patients say it is enjoyable and have compared it to a cocktail without after effects; still further, it is a sure cure for that tired feeling. Explain that the patient controls the amount of Analgesia by compressing the bulb and if it is operated just right you think no pain will be felt; in fact, Analgesia is usually considered a pleasant experience.

State that to get the best results the bulb should be compressed in rhythm with each inhalation and

that the patient should breathe normally through the nose. Emphasize that only air will be breathed unless the bulb is compressed. Refer to the gas only as "N₂O" or "Nitrous Oxid" and explain that it has no unpleasant odor.

Spray a little Lavoris or any pleasant deodorant into the nasal inhaler and then wipe out with gauze before placing in position. This will eliminate any unpleasant smell of rubber.

Never ask the patient, "Do you feel pain?" but instead take it for granted that there is none. After the work is accomplished, ask the patient, "How do you like Analgesia?"

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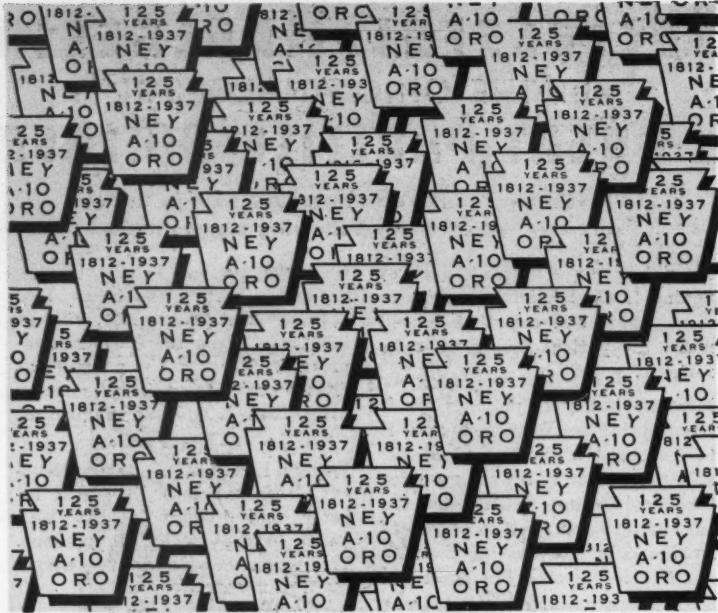
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and "variable" answers could be considered as springing from the same general understanding and could be classified in the same group. This understanding of limitations is a healthy attitude.

Certainly most of the answers to "What relation do teeth have to general health?" were reasonable as almost all understood there was a close relationship.

Some of the misunderstanding expressed on, "Do you think of extraction of a tooth in the same way as you do an operation?" is our fault. Our attitude has been too casual; possibly we have not been impressed with the seriousness of what we are doing when we extract teeth. Extraction of a tooth is a definite, highly specialized surgical operation, and, of course, this fact must first be understood and appreciated by the operator.

Too much is expected from toothpastes, but here again, is a fine point: the importance of how it is to be used.

Patients apparently have a better sense of appreciation of the necessity for care of the "first" teeth than do the dentists.

The comments on crooked teeth and poorly developed jaws are interesting and satisfactory.

Answers to questions on causes of need for artificial teeth on the whole are reasonable and good and the next part of the question, whether it is just one of those things that come with age, was well answered.

This survey proves that the layman is becoming better informed and that he is thinking in reasonable terms of cause and effect; that he appreciates some of our limitations despite the fact that many dentists lead him to believe dental restorations last forever, and he understands the variable factors that determine the life of our restorative efforts.

Let us make every effort at least to be better informed than the average layman.—L. I. GILBERT D.D.S., Fargo, North Dakota.

7. After having read and studied the patient survey, the question presents itself, "What are we going to do?"

Nero fiddled while Rome burned and we have been doing a lot of fiddling while the children and people of our country are losing their lives

**ESTIMATED 800,000,000
CARIOUS TEETH—Active or
Restored**

ALLIES IN WAR AGAINST DENTAL CARIES



Estimates show that there are over 800,000,000 carious teeth, active and restored, in the United States. The American Dental Association states that in Chicago, for instance, 96.4%, in St. Louis, 94.1%, and in New York, 90% to 97% of the school children have one or more carious teeth.

No wonder doctors, dentists and nurses join hands in the war against caries. The task of prevention evolves on all. For, as the Journal of the American Medical Association pointed out in October of 1933:

"According to the White House Conference on Child Health and Protection, studies more specifically directed toward the control of dental caries have recently emphasized that active caries should be definitely regarded as indicative of dietary deficiencies."

Of the principal tooth building and nourishing essentials—calcium, phosphorus and Vitamin D—the latter is by all odds the scarcest. Just how much of the damage results from insufficient Vitamin D is not definitely known. But it has been demonstrated conclusively many times that the minerals cannot be utilized properly in forming and safeguarding the teeth except when enough Vitamin D is present.

The need for Vitamin D begins even before birth, is highly important during the nursing period, to help assure the infant of the tooth-



forming essentials, as well as to aid in protecting the mother against the withdrawal of minerals from her own teeth and bones to supply her baby.

This need for Vitamin D continues throughout the years of growth—in fact, throughout life—for always there is the need to maintain the dental and osseous structures.

Yet few foods contain Vitamin D, and sunlight is often too weakened by smoke, mist, clouds, clothing and even window glass to afford a dependable supply. Hence, *supplementary sources* are definitely indicated.

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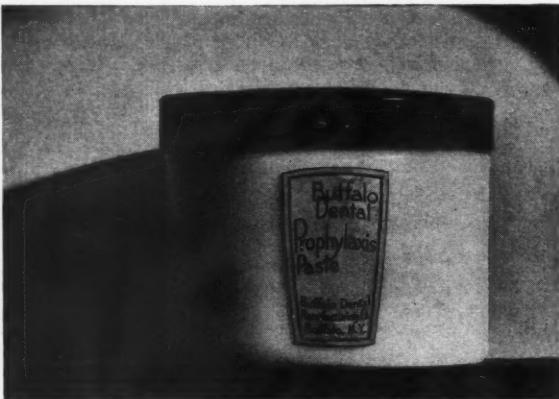
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Prophylaxis is a painless, pleasant dental experience. Your patients will have happy memories, indeed, if they leave your office with the refreshing taste of Buffalo Prophylaxis Paste in their mouths.

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paste made with Buffalo Flour of Pumice which has no equal as a prophylaxis material.

Buffalo Prophylaxis Paste is of just the right consistency; it works fast without splattering, and does a thorough job. Economical, too. The large glass jar costs only one dollar at your dealer's.

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and health and respect for our profession, and more dentists are going on the C.O.D. lists for want of a systematic and effective educational program.

When one considers that this survey was made by men over the country who are interested in this work and by patients who have come to a dental office, it is understood that the answers were from a rather well informed class of patients; and then, when one considers that only about 20 per cent of the people ever appear in an ethical dental office, just what must the other 80 per cent know? Many of the answers suggest that the information has been given patients by ethical dentists at some time or other. Who tells the other 80 per cent? It must be the advertising dentist and manufacturer, if they are told. In fact, even many of these answers suggest this.

I have been aware of this condition for a number of years because I have been doing health work for two decades, never on a salary or expense account; all I have done has been because I like it. For the last few years I have been in touch with most of the health departments and health programs in America, and a great number of foreign countries and I know the careless and ineffective way that many of these health programs are conducted; by politics, selfishness, and graft. Those that are conducted sincerely lack funds with which to work.

As a rule in health work, the weakest men in the dental profession, with poor personalities are found, because they are the only kind health projects can afford to pay. What impression are such men going to have on school teachers and children? A great deal of this work has been carried on in the schools and a child forms his likes and dislikes of people quickly.

Suppose we should do this: pool all our funds; hire the finest publicity experts in the world, and allow the trades people to contribute. We could then change conditions in a short time. But, of course, the SUPER-ETHICAL would say, "No."

The trades people want business; the dentists want patients, and the patients want health. Public health should be our main purpose and how that desirable thing is accomplished.



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True Centric is obtained by having a center bearing pin which can be adjusted horizontally when the mandible is retracted, so that it will contact the base of an inclined plane on a transverse offset in the bearing plate.

From this point if centric is established, any tracing of the mandible must be backward on the inclined plane.

In this manner Centric can be definitely determined without a Gothic Arch Tracing, but if lateral movements are made with the mandible from this point, the Arch will always be traced.

When closing to lock the trial plates, the inclined plane will guide the bite, *Automatically to the True Centric*, in the same manner that anatomical teeth find Centric Occlusion.

The Relator can be used with any method you now use in taking the bite, but a simplified technique, fully illustrated, is supplied with each set.

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FREE TRIAL: That you may have an opportunity to prove for yourself how you can solve all your bite problems, we will send out the FIRST 1000 SETS on 20 days APPROVAL.

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no one can honestly criticize. The Bureau of Public Relations does this in a way, but why not do this openly and in a big way? People reason very poorly. There is so much said about milk, bread, a number of different medicines, and tooth paste that the average person believes that to use one of these is sufficient to insure good health and good teeth. The public should know that the obedience to one or two rules of health does not suffice to produce normal tissues or to keep them normal. All the rules of right living must be intelligently obeyed to get the desired results and they should be taught these rules by the medical and dental profession or by someone who represents them, in plain and unadulterated language. It makes no difference who gives the money to do it, if it gets results and the only way this can be done is by employing experts.

I could write all day on the different sponsors of health programs throughout the country, and some have well known men connected with them. Suffice it to say, that one, making a fine splurge for the chewing gum people, has some prominent professional men assisting in the program. Another is supported by a popular mouth wash and there are some prominent men on this list, and that is all right. There is good in all those things.

I believe that these men are all sincere in their desire to help humanity and dentistry and are doing the best they can with the means available, but why not get together and hire the finest publicity experts in the country, and put on an effective and systematic program and repeat and repeat as any business firm would do. There is not much to say if it is said in the right way. This is what any business firm would do and regardless of whether the profession likes it or not, people are taught to think in terms of practical business methods and billions of dollars are being spent to bring this about and we cannot change it. They know nothing about our ethics.

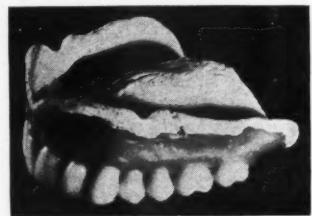
I have found that the trades people generally are over and above board and sincere in wanting to promote dentistry because they know it will eventually help them and that is the way we all feel. They do not try to horn in, any more than do the dentists. A few years ago I was chairman of the health committee of the state



New Light

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After all, the main problem in denture work, now, as always, is that of avoiding misfit . . . of making a denture that will perform properly, remain in place, and give the patient no discomfort. A perfect impression of the soft mouth tissues, taken at the right time, goes far toward correcting mechanical errors and insuring complete satisfaction of the patient.



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Regardless of the type of anaesthesia,
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society. We promoted a program which brought into the state a man to demonstrate and lecture to the dentists and schools at a fee of about \$50.00 per day and expenses. He has given clinics before our state society and other state societies several times and has been president of his state society. He is an all around good man. This man when he was in our state, getting this fee, demonstrated his tooth brush and tooth paste and sold a great number to the Portland schools and dentists. He was in my office trying to sell me and asked me not to say that he was here for that purpose. I am not complaining about this. I say it is all right if it is done in the open and not at the expense of the profession. I have sold material to the dental profession; why say it is wrong for the other fellow? Let us come out in the open. We will feel much better and the people will respect us much more.

Every dental society has a program hatched up hurriedly, with little money, by some of its members. They are trying to do the best they can with their knowledge and means. These poorly arranged programs often do more harm than good and they are doing more to lose our good standing with schools and school people of the country than anything else. A great many schools today are sick and tired of dental health programs of this type and will not tolerate them in the schools.

A cooperative program of this kind would not be different from the method we are now using, but more effective.

I am familiar with the work of the Research Commission of the American Dental Association and it has been helpful considering the money and the support it has. I am also familiar with the Bureau of Public Relations. I have supplied them with a great deal of material at no cost to the association and the beneficial circle idea is splendid; in my opinion, it is in the right direction, but why not all get behind it? They have a great deal of material but no effective way of distribution. I am familiar with the Dental Health Educational Committee's work. I have met with this committee and have been on their programs several times. They are all sincere and serious but they are poorly paid and lack the means to carry out the work. In my opinion, all these conditions



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Offer No. 2—Two five ounce bottles of Lee Smith Certified Alloy with mortar and pestle at \$14.20. You buy the alloy at the regular ten ounce rate and receive the mortar and pestle FREE.

Offer No. 3—Four five ounce bottles of Lee Smith Certified Alloy with mortar and pestle at \$27.00. You buy the alloy at the twenty ounce rate of only \$1.35 per ounce and receive the mortar and pestle FREE.

See your dealer or use the coupon on page 313.

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**No dentist ever regrets using
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could be corrected in a short while and we could revolutionize the people's idea of dentistry and help the dental profession and the public more than we now realize. About the only information that most of the public has on health is from advertising dentists and manufacturers. Some of the answers in the survey suggest this. These people have brains enough and money enough to hire advertising men to put a program on for them. They do not depend on some dentist who is willing to work for a poor salary to promote the thing that brings them bread and butter. Our only fight against it has been to try and make laws and rules to control them. In Oregon, we led in this work and paid thousands of dollars to lawyers and dentists. Today, we have more advertisers than we have ever had and they are doing two or three times as much advertising. From my survey they are doing a better business than they ever have. I can look out of my window across the street, see a large sign suggesting painless dentistry, and through the window I can see a half dozen people working all the time. In the same block is another advertiser with a sign that covers the whole front of the building. I can listen to radio programs, almost any hour of the day, and read dental advertisements in most of the daily papers. I know these people are all busier than they have been previously. You cannot legislate to make people good. We tried this in prohibition, but people are inclined to do the right thing. It is only a question of letting them know what is best for them and best for all concerned. A good clean publicity campaign would do more to correct the advertiser and the "ethical" advertiser (the man who works the churches, lodges and newspapers for all the free advertising he can get) than all other things put together.

I can speak from experience here. I once lived in a place where a nationally known advertising dentist put in a large office and there were several other advertisers in that small town. Frankly, they were doing the work and the ethical man sat around. We initiated a publicity campaign and the nationally known advertiser moved out in a short while and he told me, at that time, it was the only place he had started an office and had to move. We did not fight him, but we made it so red-hot for honest dentistry and



There can be no compromise with *Quality*

THE FORMULA from which Squibb Dental Cream is made is the result of years of scientific research and represents the best that can be offered for the daily care of the teeth.

Squibb Dental Cream is a safe, effective and pleasantly flavored dentifrice for the daily care of the mouth. It has high cleansing and polishing properties—yet contains no grit or irritating substances. It will, therefore, not scratch enamel or injure the most delicate tissues of the mouth.

Squibb Tooth Powder was developed with but one primary object in view—the preparation of a powder as safe and effective as Squibb Dental Cream for those who prefer powder. Like Squibb Dental Cream it contains a safe and effective neutralizing agent.

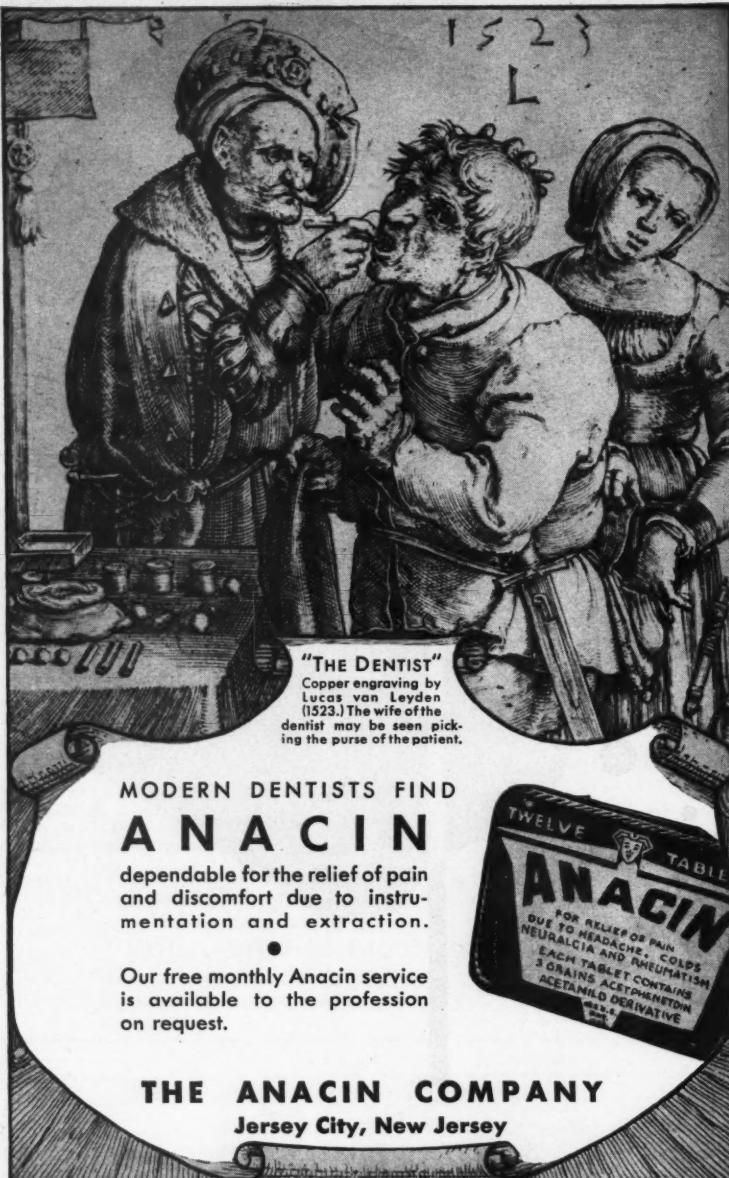
We shall be pleased to send you a complimentary package of Squibb Dental Cream and Squibb Tooth Powder for your personal use. Send your professional card to The Dental Division, E. R. Squibb & Sons, 745 Fifth Avenue, New York City.

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SQUIBB TOOTH POWDER

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dependable for the relief of pain
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Our free monthly Anacin service
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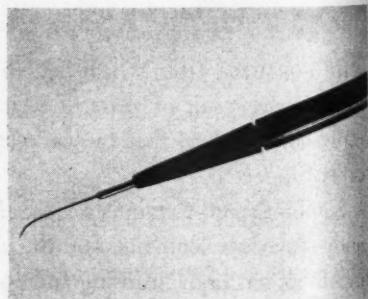
1005 Liberty Avenue

Pittsburgh, Pa.

then allowed the people to choose the kind of dentistry they wanted and they preferred ours. That town today is one of the best dental towns in the state. They have no advertisers and one of the biggest advertisers at that time is now the president of the local society and one of the others is now or has been the secretary.

I have spoken frankly, possibly too frankly, but I am not looking for a position, an expense account or an office. The dental profession does not owe me anything, and I owe it for two decades of pleasant work and association. It is not the intention of this article to criticize or condemn anyone; rather to praise. We have done our best in trying to work with what we have and lack of training at one of the hardest jobs in the world, namely: making people take care of their health and teeth, a job that is disagreeable and one they hate so much and we have been forced to use ox-cart methods in an automobile age. I do believe this is the most important thing in our profession today, and I am grateful for an opportunity to assist in any way I can.—DAVID B. HILL, D.D.S., Salem, Oregon.

TO THE
Editor



Electrode used in pyorrhoea treatment.

I have had several inquiries regarding the type of electrode that I use in pyorrhoea treatment by electroincision. The operative technique was described in the March 1937, issue of *THE DIGEST*. The electrode is a fine, curved needle point which is smaller than the area to be operated upon.—E. CHAPMAN, D.D.S., Minneapolis.